Ames Research Center
Aeronautical Test and Simulation Division

VIRTUAL SIMULATION LABORATORY

A DESKTOP ENVIRONMENT FOR REMOTE FLIGHT SIMULATION RESEARCH COLLABORATION

Simulation Laboratories

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Aeronautical Test and Simulation Division

VIRTUAL SIMULATION LABORATORY

A virtual environment providing remote, interactive participation with ARC simulation laboratories

Leverages information technologies inherent to real-time simulation to create an immersive, highly interactive, virtual environment tailored to the needs of the aeronautical design process

Expedites delivery of aeronautical knowledge obtained from simulation experiments to US aircraft industry

Provides on-line, real-time collaboration and participation for a larger group of engineers and pilots in an era of tight travel budgets.
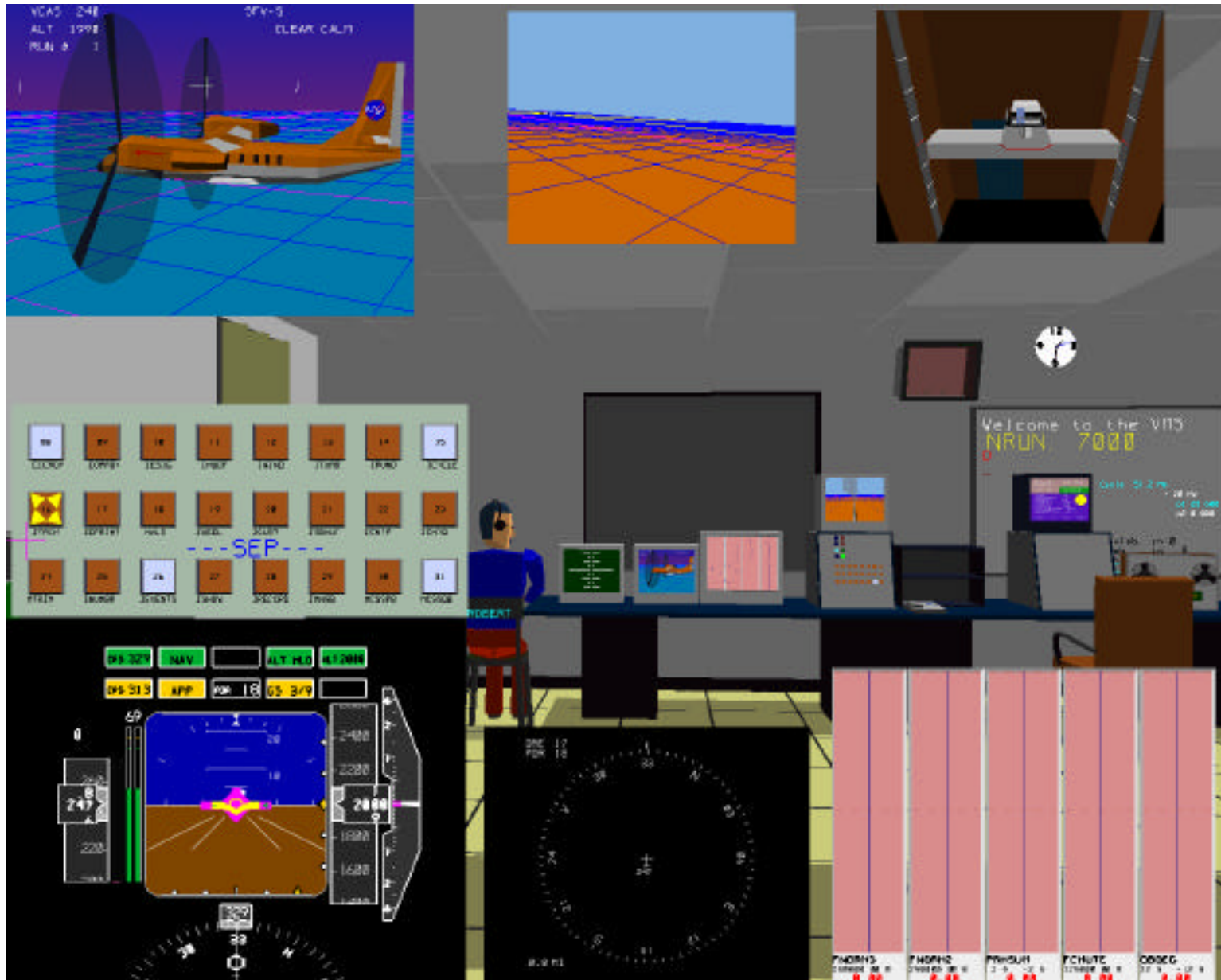
3D Virtual VMS Laboratory Environment

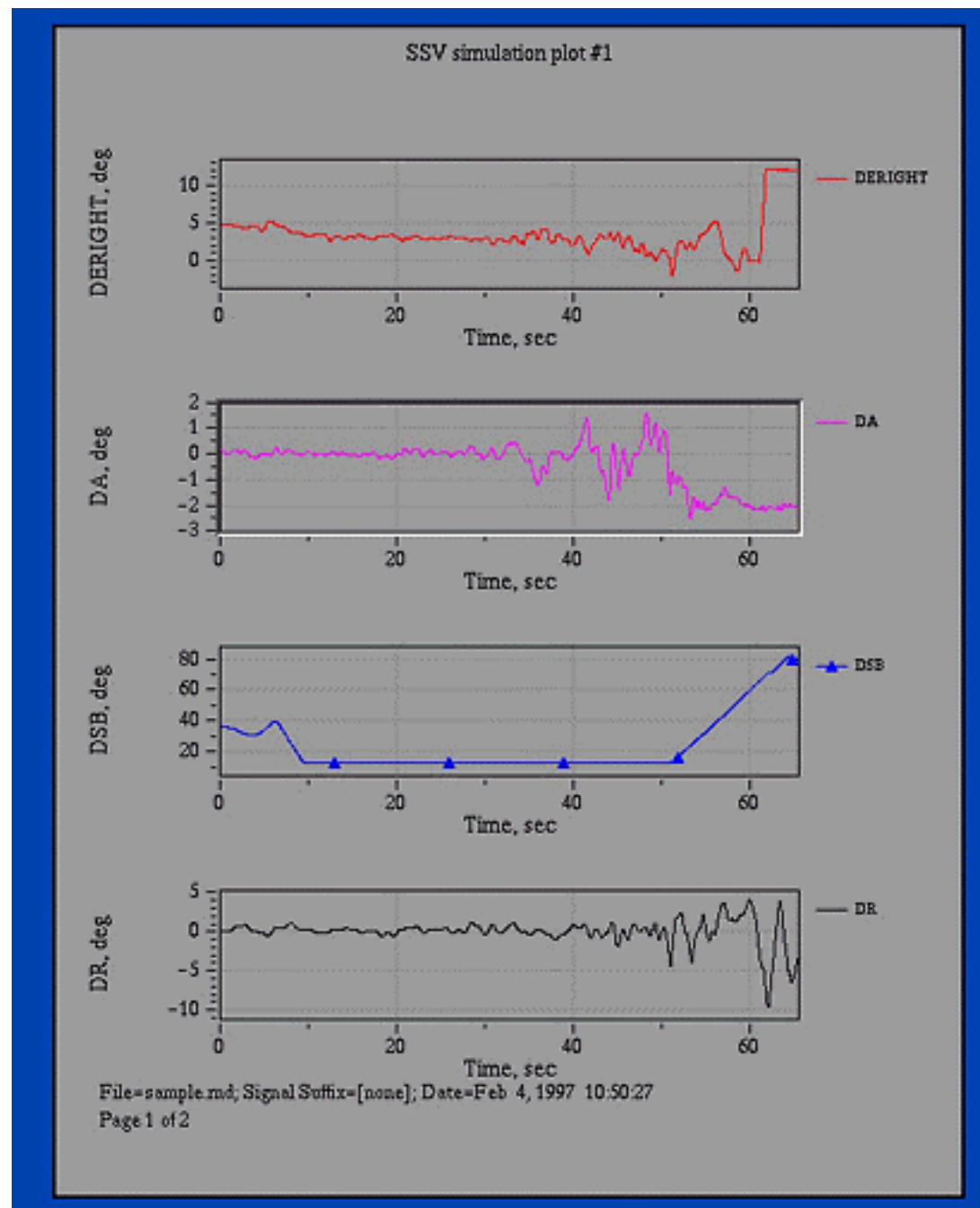**3D Virtual VMS Laboratory & Motion System Environment**

3D Virtual Lab with 2D SEP, Stripchart and PFD Display Overlays

Multiple 2D Displays Overlaid onto 3D Virtual Lab Environment

Multiple 2D Displays Overlaid onto 3D Virtual Lab & Motion System

X-Y Plotting Using Quickplot

**VLAB Configuration at the
Johnson Space Center (JSC)**

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VLAB Systems Block Diagram
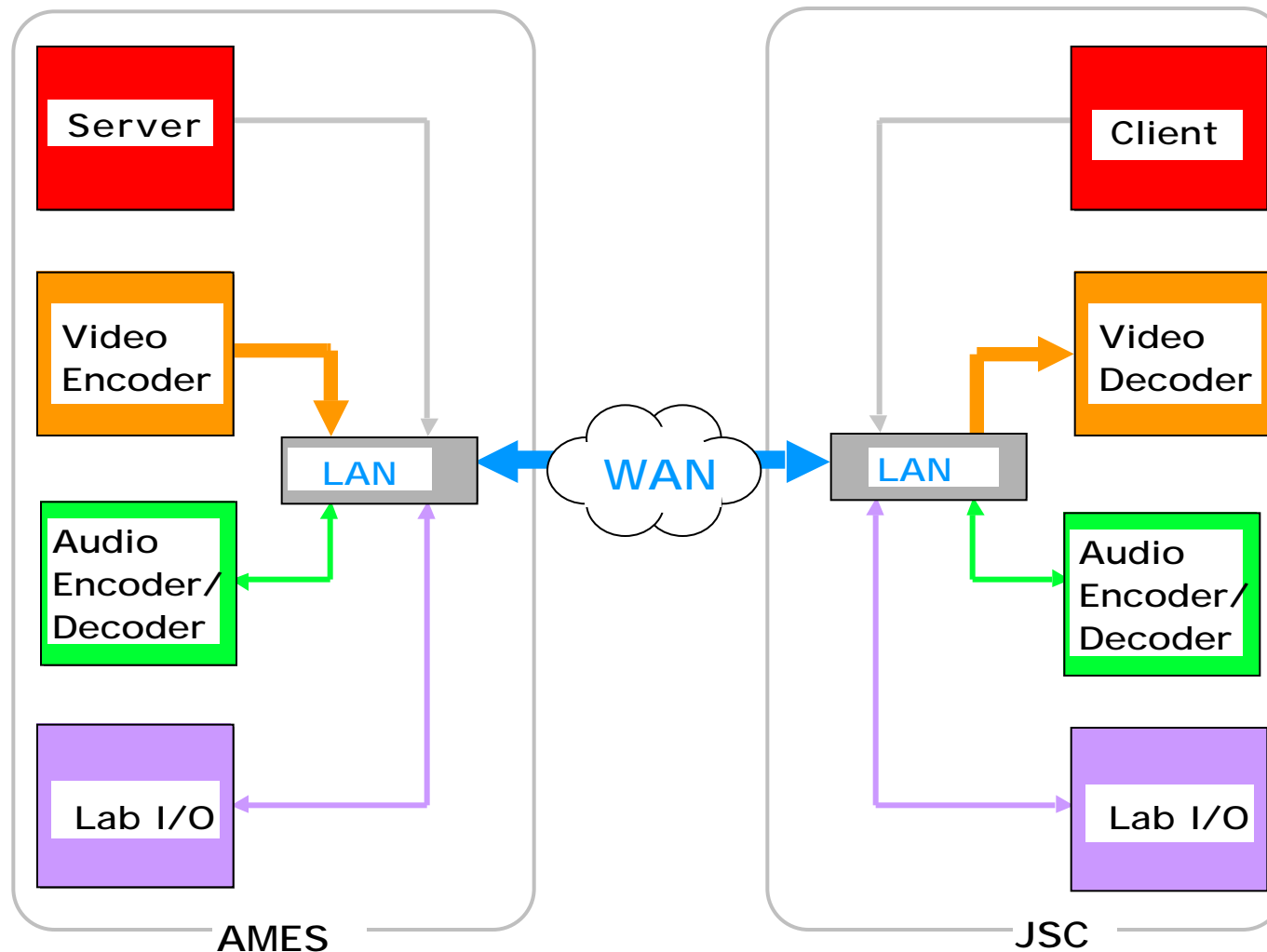
Server

Client

Video Encoder

Video Decoder

LAN

WAN

LAN

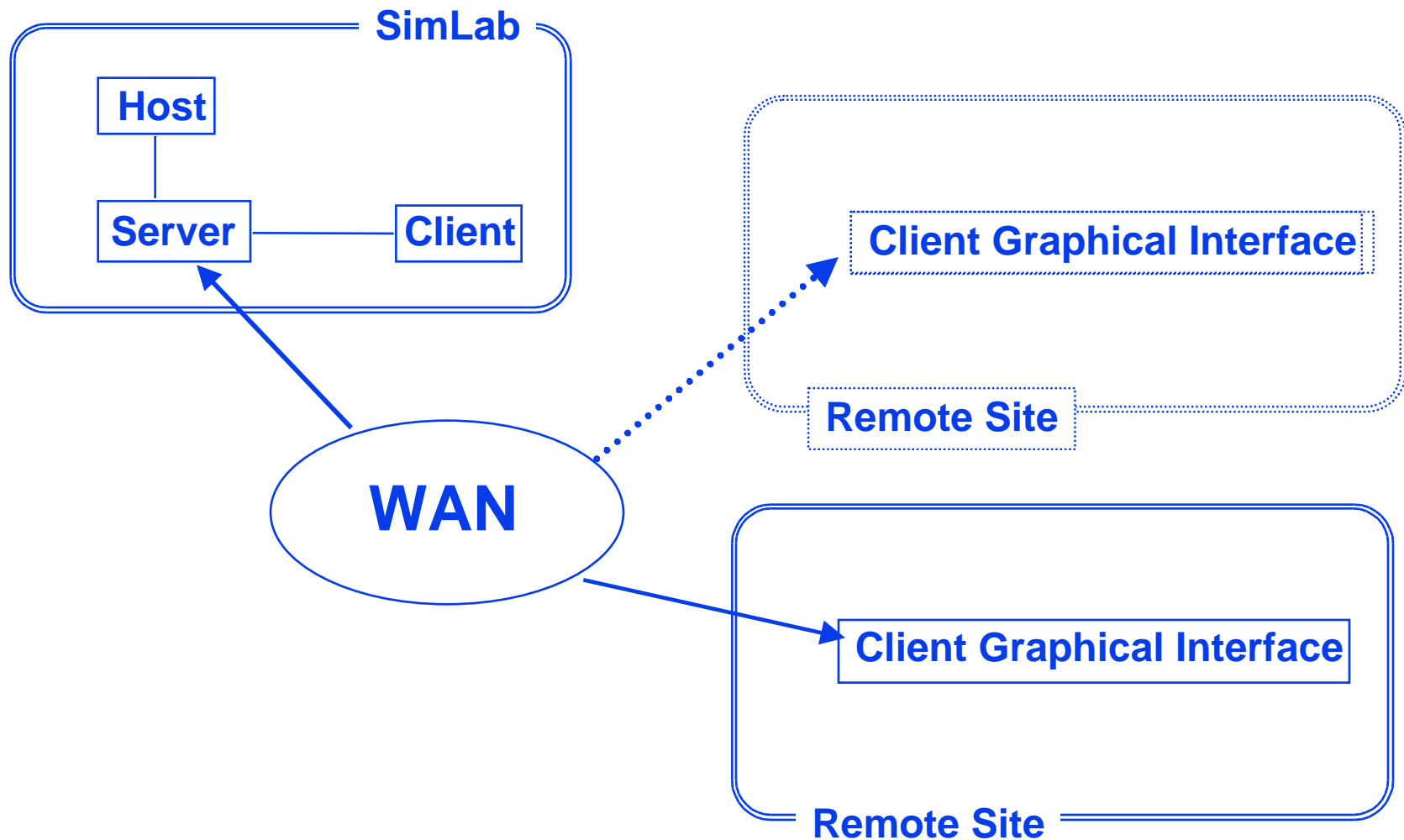Audio Encoder/ Decoder

Audio Encoder/ Decoder

Lab I/O

Lab I/O

AMES

JSC

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BASIC SYSTEM ARCHITECTURE

SimLab

Host

Server — **Client**

WAN

Client Graphical Interface

Remote Site

Client Graphical Interface

Remote Site

Simulation Laboratories

VLAB FEATURES

- ## Client Station

  - ### Navigable 3D VMS Lab and Motion System Environment W/

    - » **User Configurable 2D Lab Displays**
      - Head-up and Head-down Avionics Displays
      - OTW and Offset Aircraft View Emulation
      - On-screen Stripcharts
      - Shared Whiteboard
      - SEP and PEP Panel Displays
      - Selectable Views of Motion System
      - On-screen Scaling and Location of 2D Displays
      - Ambient Audio From VMS Lab
      - Embedded Audio Cues

  - ### Quickplot Data Analysis Tools

VLAB FEATURES

- ## Optional
  - ### MPEG Transmission of OTW Display
    - » Currently Limited to One Remote Site
    - » Requires Minimum 8 Mbit/sec Bandwidth WAN Connection
  - ### Video Conferencing W/
    - » Two Way Video/voice Communication
    - » Whiteboard
    - » FTP File Transfer
    - » Requires Minimum 6 Mbit/sec Bandwidth WAN Connection
  - ### Two Way Interactive Voice Communication
    - » With Wireless Headsets
    - » ROH Interface
    - » Currently Limited to One Remote Site
  - ### Option Availability Based On:
    - » Current Compliment of Deployable Systems
    - » Remote Site Network Bandwidth and Performance Available

CONTACTS

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